SKYRAD Datalogger Replacement Procedure

I. Purpose:

This document describes the steps necessary for replacing the SKYRAD datalogger.

II. Cautions and Hazards:

- Before starting the following procedure, make sure that the data logger data has been uploaded to ADaM recently. Accessing the ZENO software configuration can lead to deletion of all old data.

III. Requirements:

- A RAD data logger.
- Calibration report for each sensor.
- Notebook PC with RS232/EIA422/Impulse adapter cable.
- Checkout equipment (as specified by Sensor Mentors).

IV. Procedure:

While conducting this procedure, log the serial numbers and configuration file differences on the Excel formatted replacement record forms (examples attached).

1. If the ZENO in the data logger to be replaced is still functioning, upload the Configuration to the notebook computer.
2. Using a text editor, change sensor calibration coefficients in the SKYRAD configuration file for the replacement data logger as necessary. The naming convention for the configuration file is “SKYsssn.txt” where “sss” is the three-digit serial number of the data logger and n is an alphabetic version number, e.g. “SKY301a.txt” is the first SKYRAD configuration version for data logger serial number 301. If any changes are made, save the new configuration file incrementing the version number by 1, e.g. the second version of SKYRAD configuration for data logger serial number 301 is “SKY301b.txt.”
3. Disconnect cables and the ground lead from the old data logger.
4. Connect the ground lead to the replacement data logger case. This must be done before continuing with the procedure.
5. Connect power to the data logger.

6. Using the RS232/EIA422/Impulse adapter, connect a notebook computer to the data logger.
7. Unload the proper software configuration to the ZENO.
8. Connect the sensors to the data logger. Refer to the SKYRAD SENSOR CONFIGURATION TABLE for proper connections.
9. Use a digital voltmeter to measure the input power voltage. If necessary, adjust the calibration factor (Sensor 13) to obtain the proper external battery voltage reading. The latter can be viewed by selecting the Scaled Sensor Data option from the ZENO Test Menu.
10. Follow any procedures given by the Sensor/Instrument Mentors.
11. Verify that the ZENO is measuring all signals properly by using the Test Menu and Output Message.
12. Verify that the ZENO is logging data using the Data Retrieval Menu.
13. Save the Configuration to EEPROM.
14. Disconnect the notebook computer and connect the logger to ADaM.
15. Download the current ZENO configuration file to ADaM.
16. Record the date, start-time, end-time, and any comments in the site operations log.
17. Enter a table of the serial numbers and calibrations for the sensors connected to the SKYRAD data logger into the appropriate log book.
18. Send a copy or a listing of the sensor serial numbers and the configuration file to the data logger mentor.

V. References:

1. Dick Hart.

VI. Attachments

1. SKYRAD Sensor Configuration Table.

Attachment 1. SKYRAD SENSOR CONFIGURATION TABLE

When installing or changing the following sensors or instruments, the calibration coefficients need to be written into the appropriate ZENO Sensor Menu. The offsets in the Sensor Menu and the values of the fixed resistors in the Process Menu for the PIR thermistors should only be changed as a result of a data logger calibration using 0.1% precision resistors.

Sensor or Instrument	Designation	Sensor Menu No.	Connector No.
Global Pyrgeometer	PIRG	1	2
Diffuse Pyrgeometer	PIRD	2	6
Global Pyranometer	PSPG	3	1
Diffuse Pyranometer	PSPD	4	5
Pyroheliometer	NIP	5	7
Infra-Red Thermometer	IRT-UP	6	3
UVB Temperature	UVB-T	7	4
UVB Signal	UVB-UV	8	4